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Luz Maria DeAlba* (luz.dealba@drake.edu), Mathematics and Computer Science, Drake University, 2507 University Ave., Des Moines, IA 50311. *Spectrally arbitrary patterns: the $2n$ conjecture for $n = 5$.*

A sign pattern $Z = [z_{ij}]$ is a matrix such that $z_{ij} \in \{+, -, 0\}$. An $n \times n$ sign pattern Z is spectrally arbitrary if for any self-conjugate set of complex numbers, there is a real matrix with sign pattern Z having the given set as its spectrum. In: T. Britz, J. J. McDonald, D. D. Olesky, and P. van den Driessche, “Minimal spectrally arbitrary patterns” SIAM J. Matrix Anal. Appl. 26:257–271, 2004, it was conjectured that any $n \times n$ spectrally arbitrary sign pattern must have at least $2n$ nonzero entries. This conjecture was shown to be true for $n \leq 4$ in: L. Corpuz, J. J. McDonald, “Spectrally arbitrary zero-nonzero patterns of order 4”, Linear and Multilinear Algebra, 55:249–273, 2007. In this paper we establish the conjecture as true for 5×5 sign patterns as well as for zero-nonzero patterns. (Received August 24, 2007)